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ORIGINAL FILED  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:

Daniel Xu et al.

Serial No.: 09/976,641

Filed: October 12, 2001

For: Reducing Leakage Currents in  
Memories With Phase-Change  
Material

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Art Unit: 2815

Examiner: B. Baumeister

Atty Docket: ITO.0004US  
P12497

TECHNOLOGY CENTER 28000  
JUN 27 2002

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Response  
#5  
7/1/02

Commissioner for Patents  
Washington, DC 20231

**REPLY TO PAPER NO. 4**

Sir:

In response to the office action mailed May 29, 2002, reconsideration is requested in view of the following remarks.

**REMARKS**

Claim 11 was rejected over the combination of Ovskinsky in view of Chang. Claim 11 calls for a phase change material over a substrate. A buried line of a first conductivity type is formed in the substrate. The buried line includes a pair of more lightly doped regions around a more heavily doped region. The claim further calls for a region of a second conductivity type opposite the first conductivity type over the line and under the phase change material.

Neither of the cited references, or even their combination even assuming there were a rationale to combine, meets the claim limitations. Namely, none of the references or their combination teaches a buried line having a pair of more lightly doped regions around a more heavily doped region. The Examiner, in paragraph b, simply concludes, without any support whatsoever, that this would be obvious. But there is absolutely no teaching in any of the references to do what is claimed. If neither of these prior inventors

Date of Deposit: June 17, 2002  
I hereby certify under 37 CFR 1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated above and is addressed to the Commissioner for Patents, Washington DC 20231.  
Cynthia L. Hayden  
Cynthia L. Hayden

thought to do what is claimed, there simply is no showing of why it would be obvious. Therefore, the rejection fails to make out a *prima facie* rejection.

Moreover, the rejection is deficient because there is no rationale to combine Chang, which relates to a diode, with Ovshinsky, which relates to a phase change material memory.

Moreover, there is no teaching of a buried line with a region of a second conductivity type opposite the first type over the line and under the phase change material memory. In other words, the claimed structure is not shown under any type of memory device, much less under a phase change material memory.

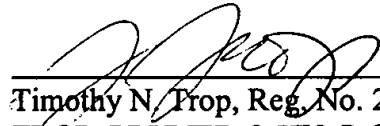
Claim 21 also calls for a phase change material over a surface. A conductive line in the surface has a more heavily doped region sandwiched between more lightly doped regions. The conductive line provides signals to the phase change material. As described above, the line with the more lightly doped regions that sandwich a more heavily doped region is nowhere suggested.

Therefore, the application is now in condition for allowance and the Examiner's prompt action in accordance therewith is respectfully requested.

Respectfully requested,

Date: \_\_\_\_\_

6/17/02

  
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